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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/074,635	02/13/2002	Pang-Chia Lu	2002B005	7203

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EXAMINER	
MAYES, MELVIN C	
ART UNIT	**PAPER NUMBER**
1734	

DATE MAILED: 07/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/074,635	LU, PANG-CHIA	
	Examiner	Art Unit	
	Melvin Curtis Mayes	1734	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 May 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6 and 10-23* is/are pending in the application.

4a) Of the above claim(s) *13-23* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6 and 10-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3/22/04*.
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

(1)

Newly submitted claims 13-23 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

The inventions of Claim 1 and Claim 13 are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the combination does not require the extruded film to comprise an opaque core layer and polyolefin skin layer with each layer substantially free of voids. The subcombination has separate utility such as for printing a preformed non-oriented polymeric film.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 13-23 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 103

(1)

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

(2)

Claims 1-6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Wood, Jr. 5,397,635 or Peet et al. 6,048,608, in view of Jennel 6,102,536.

Wood, Jr. discloses a method of making a multi-layer opaque, biaxially oriented polymeric film for packaging food products comprising: co-extruding a skin layer of polypropylene blended with titanium dioxide pigment (coloring agent) and a core layer of polypropylene blended with void-initiating particles (cavitating agent); biaxially orienting the film in the machine direction and transverse direction; and treating the skin layer such as by corona discharge to improve its receptivity to printing inks (col. 3-8). Wood, Jr. does not disclose passing the oriented film to a digital printer for printing indicia on oriented packaging film by application of a radiation curable ink on the skin layer.

Peet et al. disclose a method of making an opaque, biaxially oriented polyolefin film for use for packaging food comprising: co-extruding a skin layer of pigmented polyolefin and an opaque layer of polypropylene and cavitating agent; and biaxially orienting the co-extruded film. Peet discloses that the polymer of the skin layer is chosen so that the skin layer can be printed (col. 2-6). Peet et al. do not disclose passing the oriented film to a digital printer for printing indicia on oriented packaging film by application of a radiation curable ink on the skin layer.

Jennel teaches that in the packaging industry, while the commonly used printing techniques are gravure and offset, these techniques require a number of steps and create vast amounts of waste. Jennel teaches that a method of printing of a web of packaging material, such as a web of flexible plastic material, that eliminates the drawbacks of the previously known systems and allows for the immediate substitution of another digital image and on-demand production is a method in which an electronically storable and retrievable digital image is generated, the image is transferred to a printing site and the digital image is printed directly on the web. The step of digitally printing can include using an inkjet printhead and a UV-reactive ink cured by exposure to UV light after printing. Jennel teaches that the step of printing can be provided in conjunction with a material processing line which may include extruders or may be provided in proximity with, or as a part of, a forming, filling and seal packaging machine. The printing site may also be provided in conjunction with a pre-treatment device prior to printing to treat the web such as by flame, corona or plasma treatment to allow for greater bond between the surface of the web and the ink (col. 2-6).

It would have been obvious to one of ordinary skill in the art to have modified the method of either Wood, Jr. or Peet et al. for making an opaque, biaxially oriented film for packaging by printing the packaging film with a digital printer, as taught by Jennel, to eliminate the drawbacks of the previously known printing methods of gravure and offset for printing packaging and to allow for the immediate substitution of another digital image and on-demand production. Digitally printing the film using an ink jet printer and UV-curable ink (radiation curable ink), as claimed in Claims 1-3, would have been obvious to one of ordinary skill in the

art, as taught by Jennel, as one type of printer and ink that can be used to digitally print a web of plastic material to be used for packaging.

By providing an oriented film comprising a polypropylene or polyolefin skin layer for printing, the oriented film obviously comprises at least one polyolefin layer substantially free of voids, as claimed.

Providing the step of digitally printing the film in-line with co-extruding and orienting the packaging film, as claimed in Claim 4, or off-line where a roll of the co-extruded and oriented packaging film is fed past the ink jet printer as part of converting the film to packages, as claimed in Claims 5-6, would have been obvious to one of ordinary skill in the art, as Jennel teaches that the step of printing can be provided in conjunction with a material processing line which may include extruders or may be provided in proximity with, or as a part of, a forming, filling and seal packaging machine. Printing the film either during processing the film or during forming the film into packaging would have been obvious to one of ordinary skill in the art, as taught by Jennel.

(3)

Claims 1-6 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Peiffer et al. 2002/0071960 or Frognet et al. 5,178,942, in view of Jennel 6,102,536.

Peiffer et al. disclose a method of making a biaxially oriented, multilayer polypropylene film for use as packaging comprising: co-extruding a top layer (skin layer) of polyolefin, an intermediate layer (transition layer) of polyolefin containing pigment (coloring agent) and an opaque base layer (core layer) of polypropylene containing vacuole-inducing particles (cavitating agent) from a die onto a take-off roll; and biaxially stretching (orienting) the resulting film

longitudinally (machine direction) and transversely. Peiffer et al. disclose that the film can be easily processed on high-speed packaging and processing machines and should be readily printable [0013]-[0128]. Peiffer et al. do not disclose passing the oriented film to a digital printer for printing indicia on oriented packaging film by application of a radiation curable ink on the skin layer.

Frognet et al. disclose a method of making an opaque, biaxially oriented film for packaging comprising: co-extruding a skin layer of polyolefin, an intermediate of polyolefin and titanium dioxide pigment (coloring agent) and a core layer of polypropylene and void initiating particles (cavitating agent); biaxially stretching the film; and treating the skin layer such as by corona discharge to improve its receptivity to printing inks. Frognet et al. disclose that the such cavitied or voided films are ideally suited for certain applications such as those employing form fill and seal machinery (col. 3-12). Frognet et al. do not disclose passing the oriented film to a digital printer for printing indicia on oriented packaging film by application of a radiation curable ink on the skin layer.

Jennel teaches that in the packaging industry, while the commonly used printing techniques are gravure and offset, these techniques require a number of steps and create vast amounts of waste. Jennel teaches that a method of printing of a web of packaging material, such as a web of flexible plastic material, that eliminates the drawbacks of the previously known systems and allows for the immediate substitution of another digital image and on-demand production is a method in which an electronically storable and retrievable digital image is generated, the image is transferred to a printing site and the digital image is printed directly on the web. The step of digitally printing can include using an inkjet printhead and a UV-reactive

ink cured by exposure to UV light after printing. Jennel teaches that the step of printing can be provided in conjunction with a material processing line which may include extruders or may be provided in proximity with, or as a part of, a forming, filling and seal packaging machine. The printing site may also be provided in conjunction with a pre-treatment device prior to printing to treat the web such as by flame, corona or plasma treatment to allow for greater bond between the surface of the web and the ink (col. 2-6).

It would have been obvious to one of ordinary skill in the art to have modified the method of either Peiffer et al. or Frognet et al. for making an opaque, biaxially oriented film for packaging by printing the film with a digital printer, as taught by Jennel, to eliminate the drawbacks of the previously known printing methods of gravure and offset for printing packaging and to allow for the immediate substitution of another digital image and on-demand production. Digitally printing the film using an ink jet printer and UV-curable ink (radiation curable ink), as claimed in Claims 1-3, would have been obvious to one of ordinary skill in the art, as taught by Jennel as one type of printer and ink that can be used to digitally print a web of plastic material to be used for packaging.

By providing the oriented film comprising a polyolefin skin layer for printing, the oriented film obviously comprises at least one polyolefin layer substantially free of voids, as claimed.

Providing the step of digitally printing the film in-line with co-extruding and orienting the film, as claimed in Claim 4, or off-line where a roll of the co-extruded and oriented film is fed past the ink jet printer as part of converting the film to packages, as claimed in Claims 5-6, would have been obvious to one of ordinary skill in the art, as Jennel teaches that the step of

printing can be provided in conjunction with a material processing line which may include extruders or may be provided in proximity with, or as a part of, a forming, filling and seal packaging machine. Printing the film either during processing the film or during forming the film into packaging would have been obvious to one of ordinary skill in the art, as taught by Jennel.

(4)

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claim 1 in paragraph (2) or (3) above, and further in view of Bobo et al. 2002/0192482 and Lu et al. 5,891,552.

The references disclose providing or treating the film to improve its receptivity to printing inks.

Bobo et al. teach that polyolefin films for packaging have low surface energies which make them non-receptive to certain inks. Bobo et al. teach that the ink receptivity of plastic film, such as oriented polypropylene film, is increased to render the film computer imprintable by any of the available techniques such as industrial ink jet by providing the plastic film with a coating composition [0002]-[0010].

Lu et al. teach that when using a coating composition to enhance the printability of plastic films, a primer such as polyethyleneimine or epoxy resin can be used to enhance the binding of the coating to the uncoated film (col. 6, lines 53-56).

It would have been obvious to one of ordinary skill in the art to have modified the method of the references as combined by coating the skin layer of the oriented film with a print enhancing coating, as taught by Bobo et al., to increase the ink receptivity of the polyolefin film so as to render the film computer imprintable by the ink jet printer. Coating the skin layer with a

primer such as polyethyleneimine or epoxy resin, as claimed in Claim 10, before coating with the print enhancing coating would have been obvious to one of ordinary skill in the art, as taught by Lu et al., to enhance the binding of the printability-enhancing coating to the film. The use of a primer coating to enhance the bonding of the ink-receptive coating to the skin layer of the oriented film would have been obvious to one of ordinary skill in the art, as taught by Lu et al.

Response to Arguments

(5)

Applicant's arguments filed May 3, 2004 have been fully considered but they are not persuasive.

Applicant argues that none of the references suggest the application of an ink image onto a polyolefin layer surface with a digital printer because the surfaces are not receptive to conventional inks. Applicant argues that Jennel teaches a placing a layer of silicon oxide onto the surface is necessary for printing polyethylene or PET and therefore teaches that an additional ink receptive layer must be added. Applicant argues that Jennel does not recognize printing UV-reactive ink directly onto the surface of a polyolefin web. Applicant argues that a polyolefin layer substantially free of voids, as claimed, is different from a polyolefin layer having a silicon oxide coating, which must be considered a voided layer.

(6)

Applicant makes arguments that none of the reference suggest the application of an ink image directly onto a polyolefin layer surface with a digital printer because the surfaces are not receptive to conventional inks and Jennel teaches that an additional ink receptive layer must be

added. However, according to Applicant's own specification, the polyolefin is not necessarily printed directly on its surface but its surface can be better adapted to accept indicia by various treatments such as corona, primers and print enhancing coatings. This is what the references also suggest, and the claims are not limited to printing directly on the surface without any treatment or coatings, especially since dependent Claim 10 claims coating the polyolefin layer with a primer.

Jennel clearly teaches and provides motivation for printing packaging material using digital printing via an inkjet printhead and a UV-reactive ink cured by exposure to UV light after printing. Applicant points to the teaching of Jennel that the web to be printed can be PE or PET coated with silicon oxide. However, Applicant ignores other teachings in the reference that the web can be pre-treated such as by corona for printing (also taught by Wood, Jr, and Frognet). Even if a silicon oxide coating is used on a web to aid in printing, Jennel is not limited to just this method of enhancing printing receptivity. If the coating is to aid in printing, then there would be no need for pre-treatment. Pre-treatment via corona, etc. is thus an alternative to a coating.

Applicant compares the claimed void-free polyolefin layer to the silicon oxide coated polyolefin layer of Jennel. As to void-free, the primary references disclose a polyolefin skin layer which is void free. With respect to Jennel, the silicon oxide coating does not have to be considered a part of the polyolefin layer as argued any more than a primer layer or print enhancing coating has to be considered part of the claimed void-free polyolefin layer. For example, if primer is to be considered a part of the polyolefin layer, the polyolefin layer would comprise a primer coating, not be coated with primer as claimed in Claim 10. Nevertheless, the

teachings of the references, including Jennel, of using corona for enhancing printing suggest that a silicon oxide coating is not necessary.

Conclusion

(7)

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

(8)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melvin Curtis Mayes whose telephone number is 571-272-1234. The examiner can normally be reached on Mon-Fri 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Fiorilla can be reached on 571-272-1187. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Melvin Curtis Mayes
Primary Examiner
Art Unit 1734

MCM
July 13, 2004